Zirfaea crispata (Atlantic Great Piddock)

Priority 2 Species of Greatest Conservation Need (SGCN)

Class: *Bivalvia* (Marine And Freshwater Molluscs)
Order: *Myoida* (Saltwater Clams)
Family: *Pholadidae* (Piddocks And Angelwings)

General comments: none

No Species Conservation Range Maps Available for Atlantic Great Piddock

SGCN Priority Ranking - Designation Criteria:

Risk of Extirpation: NA

State Special Concern or NMFS Species of Concern: NA

Recent Significant Declines:

Atlantic Great Piddock is currently undergoing steep population declines, which has already led to, or if unchecked is likely to lead to, local extinction and/or range contraction.

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1973; climate change - Southward et al. 1995; Schiel et al. 2004; understudied as dredge by-catch, professional judgement

Regional Endemic: NA

High Regional Conservation Priority: NA

High Climate Change Vulnerability:

Zirfaea crispata is highly vulnerable to climate change.

Understudied rare taxa:

Recently documented or poorly surveyed rare species for which risk of extirpation is potentially high (e.g. few known occurrences) but insufficient data exist to conclusively assess distribution and status. *criteria only qualifies for Priority 3 level SGCN*

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1973; climate change - Southward et al. 1995; Schiel et al. 2004; understudied as dredge by-catch, professional judgement

Historical: NA

Culturally Significant: NA

Habitats Assigned to Atlantic Great Piddock:

Formation Name **Intertidal**

Macrogroup Name **Intertidal Bedrock**

Habitat System Name: Low-Intertidal ****Primary Habitat**** **Notes:** *adult spawning (sperm fertilize eggs within females mantle cavity, eggs develop in mantle cavity and advanced veliger released), juvenile feeding habitat, adult feeding habitat*

Macrogroup Name **Intertidal Mudflat**

Habitat System Name: Mudflat Macrogroup - Unknown Habitat System ****Primary Habitat**** **Notes:** *actual habitat is hard clay (soft rock like shale and hardened sediment like clay), adult spawning (sperm fertilize eggs within females mantle cavity, eggs develop in mantle cavity and advanced veliger released), juvenile feeding habitat, adult feeding habitat*

Formation Name **Subtidal**

Macrogroup Name **Subtidal Bedrock Bottom**

Habitat System Name: Bedrock ****Primary Habitat**** **Notes:** *adult spawning (sperm fertilize eggs within females mantle cavity, eggs develop in mantle cavity and advanced veliger released), juvenile feeding habitat, adult feeding habitat*

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Formation Name **Subtidal**

Macrogroup Name **Subtidal Mud Bottom**

Habitat System Name: Mud Bottom Macrogroup - Unknown Habitat System ****Primary Habitat**** **Notes:** *actual habitat is hard clay (soft rock like shale and hardened sediment like clay), adult spawning (sperm fertilize eggs within females mantle cavity, eggs develop in mantle cavity and advanced veliger released), juvenile feeding habitat, adult feeding habitat*

Macrogroup Name **Subtidal Pelagic (Water Column)**

Habitat System Name: Nearshore **Notes:** *larval development and dispersal*

Habitat System Name: Offshore **Notes:** *larval development and dispersal*

Stressors Assigned to Atlantic Great Piddock:

Stressor Priority Level based on Severity and Actionability

	Moderate Severity	High Severity
Highly Actionable	Medium-High	High
Moderately Actionable	Medium	Medium-High
Actionable with Difficulty	Low	Low

IUCN Level 1 Threat **Pollution**

IUCN Level 2 Threat: Agricultural and Forestry Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Loss of habitat due to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutants), and/or sediments can reduce populations size. Direct effects could include toxicicity of tributyl compounds shown in other gastropods.

IUCN Level 2 Threat: Industrial and Military Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Oil spills are toxic to species with intertidal distributions. Local scale spills have an unpredictable likelihood and actionability is moderate and influenced by response time to spills.

IUCN Level 1 Threat **Biological Resource Use**

IUCN Level 2 Threat: Fishing and Harvesting of Aquatic Resources

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Large-scale, commercial trawling lcauses ecosytem degredation reducing population size and subsequently results in local extinctions, impaired role of the functional group "suspension feeders." Large-scale incidental catch contributes to these effects. Likelihood is high (high certainty) and large scale (throughout the region where this species occurs). Actionability is low for incidental catch.

IUCN Level 1 Threat **Climate Change and Severe Weather**

IUCN Level 2 Threat: Habitat Shifting or Alteration

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased suvivorship of larvae, and growth and feeding shown in other molluscs. Likelyhood is high and large scale. The ability to mitigate ocean acidification is low.

IUCN Level 2 Threat: Temperature Extremes

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Atlantic Great Piddocks are cold-water species. Increased water temperatures may have interactive effects with ocean pH decreasing suvivorship of larvae and growth rate shown for other molluscs. Likelihood is high (high certainty) and large scale. The ability to mitigate sea temperature change is low.

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IUCN Level 1 Threat **Invasive and Other Problematic Species, Genes and Diseases**

IUCN Level 2 Threat: Invasive Non-native-Alien Species-Diseases

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Invasive non-native and alien diseases could have effects largely unknown at this time. Likelihood is high and large scale (throughout the region), so actionability is low.

Species Level Conservation Actions Assigned to Atlantic Great Piddock:

None. ***Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are summarized here.***

Conservation Actions Associated with the Bivalves Guild:

Conservation Action **Category:** Policy **Biological Priority:** critical **Type:** on-going

Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.

Stressor(s) Addressed By This Conservation Action

Marine and Freshwater Aquaculture

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.